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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Serial No. 09/443,793
Filed: November 18, 1999
Inventor: David E. Albrecht
Title: FLANGE PLATES FOR
FLUID PORT INTERFACES
Examiner: Alison K. Pickard
Art Unit: 3676
File No.: 505-02

BRIEF FOR APPELLANT

Appellant submits this Brief, pursuant to 37 C.F.R. §41.37. A Notice of Appeal was filed on September 3, 2004, and was received by the Office on September 9, 2004. Attached is a Credit Card Payment Form (PTO Form 2038), authorizing a payment of \$170.00, which is the fee for filing this Brief.

I. Real Party in Interest

The present application is not assigned. David E. Albrecht is the real party in interest.

II. Related Appeals and Interferences

The undersigned is aware of no related appeals or interferences.

III. Status of Claims

The pending claims are Claims 28-35.

Claims 1-27 have been cancelled.

Claims 28-35 have been rejected.

Appellant appeals from the rejection of Claims 28-35.

IV. Status of Amendments

This application has been amended six times. All six of the following amendments have been entered:

1. Amendment mailed June 26, 2001, and received by the Office on July 2, 2001;
2. Amendment mailed January 9, 2002, and received by the Office on February 21, 2002;
3. Amendment mailed June 24, 2002, and received by the Office on July 1, 2002;
4. Amendment mailed January 10, 2003, with a Request for Continued Examination, and received by the Office on January 17, 2003;
5. Amendment mailed July 28, 2003, and received by the Office on July 30, 2003; and
6. Amendment mailed February 20, 2004, with a Request for Continued Examination, and received by the Office on February 24, 2004.

No Amendments have been submitted following the last final rejection, mailed June 7, 2004.

V. Summary of Claimed Subject Matter

The present invention relates to the field of high-pressure fluid devices, and provides a sealing plate which creates a simple but fluid-tight interface between two fluid-handling components.

In brief, the sealing plate of the present invention holds an O-ring, such that two fluid components can be made to abut the O-ring, from

opposite sides of the plate, so that a fluid connection is established from one component to the other, without leakage of fluid to the outside.

The claims on appeal relate to the embodiment shown in Figures 5C, 5D, and 5E of the present application. Because this embodiment is a modification of the embodiments shown in previous figures, only the feature added by the claimed embodiment is identified by a reference numeral. The other features of this embodiment are similar to those of the preceding embodiments. Therefore, in the following summary, reference numerals from the preceding embodiments will be given where appropriate.

The sealing plate of the present invention comprises a planar, one-piece plate (page 6, lines 16-24; Figures 1A and 1B, reference numeral 1) which has an opening (Figure 1A, reference numeral 3). The plate therefore defines a pair of surfaces which are parallel to each other (Figures 1A through 5E all show a plate defining two mutually parallel surfaces).

The sealing plate includes a non-threaded annular seal, namely an O-ring (page 6, line 25 through page 7, line 2; Figure 1B, reference numeral 5, and Figure 2B, reference numeral 11) which sits within the opening, and which extends around the entire boundary of the opening.

The annular seal extends around a non-threaded support ring (page 7, lines 14-20; Figures 2A and 2B, reference numeral 13).

The annular seal comprises the sole means of sealing two port faces of fluid handling components which abut the sealing plate, as is shown in Figure 3B. Figure 3B shows the sealing plate of the invention sandwiched between two fluid handling components 7, as described on page 7, lines 21-27.

The support ring further comprises one or more orifices (page 9, lines 6-18; Figures 5C, 5D, 5E, reference numeral 17) which provide a fluid connection between the opening 3 and the O-ring. As shown most clearly in

Figures 5D and 5E, each orifice has a longitudinal axis that is generally parallel to the surfaces of the sealing plate.

The independent claims in this application are Claims 28 and 32. Claim 28 recites the sealing plate alone, and Claim 32 recites the combination which includes the fluid component that abuts the sealing plate.

The following is a concise explanation of the subject matter of both of the above claims, with reference to the specification and drawings.

Claim 28

Claim 28 recites an apparatus for providing a non-threaded fluid seal between two port faces, comprising:

a) a generally planar, one-piece plate (page 6, lines 16-24; Figures 1A and 1B, reference numeral 1), the plate having an opening (Figure 1A, reference numeral 3), the opening having a boundary, the plate having a pair of surfaces which are parallel to each other (Figures 1A through 5E),

b) a non-threaded annular seal (page 6, line 25 through page 7, line 2; Figure 1B, reference numeral 5, and Figure 2B, reference numeral 11) disposed within the boundary of the opening, and extending around the entire boundary of the opening, and

c) a non-threaded support ring (page 7, lines 14-20; Figures 2A and 2B, reference numeral 13) disposed within the annular seal,

wherein the support ring includes at least one orifice (page 9, lines 6-18; Figures 5C, 5D, 5E, reference numeral 17) which provides a fluid connection between said opening and said annular seal,

wherein the annular seal comprises the sole means for providing a seal

between said two port faces (see Figure 3B),

and wherein the orifice has a longitudinal axis which is generally parallel to said surfaces (see Figures 5D and 5E).

The only "means plus function" language in Claim 28 is the recitation that the annular seal comprises the "sole means for providing a seal between said two port faces". This feature is supported by Figure 3B, which shows that the O-ring 11 is the only element that seals the port faces of the illustrated fluid components 7.

Claim 32

Claim 32 recites an apparatus for providing a non-threaded fluid seal between two port faces, comprising:

a) a generally planar, one-piece plate (page 6, lines 16-24; Figures 1A and 1B, reference numeral 1), the plate having an opening (Figure 1A, reference numeral 3), the opening having a boundary, the plate having a pair of surfaces which are parallel to each other (Figures 1A through 5E),

b) a non-threaded annular seal (page 6, line 25 through page 7, line 2; Figure 1B, reference numeral 5, and Figure 2B, reference numeral 11) disposed within the boundary of the opening, and extending around the entire boundary of the opening,

c) a non-threaded support ring (page 7, lines 14-20; Figures 2A and 2B, reference numeral 13) disposed within the annular seal, and

d) a fluid component (page 7, lines 21-27; Figure 3B, reference numeral 7) which abuts the plate,

wherein the support ring includes at least one orifice (page 9, lines 6-18; Figures 5C, 5D, 5E, reference numeral 17) which provides a fluid

connection between said opening and said annular seal,

wherein the annular seal comprises the sole means for providing a seal between the plate and the fluid component (see Figure 3B),

and wherein the orifice has a longitudinal axis which is generally parallel to said surfaces (see Figures 5D and 5E).

The only "means plus function" language in Claim 32 is the recitation that the annular seal comprises the "sole means for providing a seal between the plate and the fluid component". This feature is supported by Figure 3B, which shows that the O-ring 11 is the only element that seals the space between the plate 15 and either fluid component 7.

VI. Grounds of Rejection to be Reviewed on Appeal

Claims 28-35 stand rejected under 35 U.S.C. §103, over Smith (U.S. Patent No. 4,095,809) in view of Jones (U.S. Patent No. 2,278,721).

The above is the only ground of rejection in this application, and is the sole ground that is subject to this appeal.

VII. Argument

A. Claims 28 and 32

The Examiner has rejected Claims 28-35 as unpatentable over the combination of Smith (U.S. Patent No. 4,095,809) and Jones (U.S. Patent No. 2,278,721), under 35 U.S.C. §103.

Appellant submits that the rejection is not warranted, for the following reasons.

a) Smith Lacks the Claimed One-Piece Plate

Claims 28 and 32 recite a plate that is of one-piece construction. The patent to Smith shows a sealing plate that is formed in at least two distinct pieces. In particular, the "sealing plate" of Smith comprises ring 31 and locator 41. There is no question that the ring 31 and locator 41 are separate pieces. A plate having multiple parts would be impractical in the field of the present invention. The drawings of the present application show that the sealing plate is a one-piece, unitary structure.

The Examiner responds to the above by arguing that element 31 alone, in the patent to Smith, may be identified as the claimed "one-piece plate", especially because the present claims are written in open form. Appellant submits that this argument is flawed for at least the following two reasons.

i) The Ring 31 of Smith is Not a "Plate"

Element 31 of Smith, identified by the Examiner as the claimed one-piece plate, is not a plate, but instead is a ring. Figure 1 shows a cross-section of the ring 31, which occupies a part of the space between

opposing flanges 13 of pipe 11, only one portion of the wall of the pipe being visible in Figure 1. The ring 31 has an area that is vastly smaller than the cross-sectional area of the pipe, as is explicitly shown in the elevational views of Figures 2 and 3.

Thus it is not reasonable to identify the claimed "plate" with the ring 31 shown in Smith.

It is settled law that terms in a patent application should be given their ordinary meaning. Optical Disc Corp. v. Del Mar Avionics, 54 U.S.P.Q.2d 1289, 1295 (Fed. Cir. 2000). A technical term in a patent document is interpreted as having the meaning understood by persons familiar with the field of the invention, unless the specification or prosecution history indicates otherwise, Hoechst Celanese Corp. v. BP Chems. Ltd., 38 U.S.P.Q.2d 1126, 1129 (Fed. Cir. 1996); K-2 Corp. v. Salomon S.A., 52 U.S.P.Q.2d 1001, 1004 (Fed. Cir. 1999) ("[t]he general rule is that terms in the claim are to be given their ordinary and accustomed meaning"). In the present case, the term "plate" must be given its ordinary meaning, which is a generally flat member. The term "plate" should not be interpreted so broadly as to encompass the ring shown in Smith. The ring of Smith is not a plate.

ii) The Fair Teaching of Smith is of a Two-Piece Plate,
and it is Error to Apply Some Teachings of Smith
While Disregarding Others

The plate of the present invention corresponds to the combination of at least the ring 31 and the locator 41 of Smith. The truth of the latter statement is apparent from the following.

An essential component of the device of Smith is the plurality of bolts 17 which extend through holes 16 formed in the flanges. These bolts do not penetrate the ring 31, but instead pass through the locator 41.

It cannot be disputed that Smith's device would not work without the bolts. The patent states explicitly that the pipe carries high-pressure or high-vacuum fluid (column 2, line 18). In order to do so, the flanges of adjoining sections of pipe must be connected tightly. Without the bolts 17, the device of Smith would be useless.

One important and necessary function of the bolts, in Smith, is to stabilize the seal. The bolts extend through the locator 41 and thereby anchor the seal in its place.

It follows that, to a person of ordinary skill in the art, the one-piece plate of the present invention must correspond to the combination of the ring 31 and the locator 41 of Smith. It is unreasonable to focus exclusively on the ring 31, without considering the locator 41. Without both the ring and the locator, the device of Smith would be inoperative and useless.

Appellant reminds the Board that the present rejection is made under Section 103, so that the issue is what is fairly suggested by the references, taken as a whole. Ex parte Storrs, 13 U.S.P.Q.2d 1390 (Bd. Pat. App. & Int. 1988); In re Kramer, 18 U.S.P.Q.2d 1415 (Fed. Cir. 1991). Appellant submits that the person of ordinary skill, upon examining Smith, would be led to construct a sealing plate having at least two pieces, in contrast to the one-piece plate claimed as part of the present invention.

Thus, Appellant submits that Smith fails to disclose or suggest the one-piece plate recited in Claims 28 and 32, and that, for this reason alone, these claims are allowable.

b) Jones Fails to Suggest the Present Claimed Invention

The Examiner cites Jones for its showing of a gasket 46 disposed around an apertured "gasket back-up ring" 38.

Appellant submits that Jones has been improperly applied, for the following reasons.

i) The Examiner Errs in Holding that the Geometry of Jones Matches that of the Present invention

During the lengthy prosecution of this application, the Examiner has cited many references that show some kind of aperture leading to a seal. In part to overcome the rejections, Appellant inserted certain geometrical limitations into the claims, to distinguish the invention further from the prior art. One such limitation is that the orifice has a longitudinal axis which is generally parallel to the surfaces of the sealing plate.

The Examiner has cited Jones in part because it purportedly shows the claimed geometrical relationship (see the last four lines of page 2 of the Official Action of June 7, 2004, in which the Examiner's comment refers to the above-claimed feature).

But the Examiner has misread Jones. The orientations of the orifices of Jones are not as described by the Examiner, for the following reasons.

Figure 1 of Jones shows a valve. The main fluid flow occurs in ports or passages 2 and 3, which may connect with a pipeline (page 1, column 2, lines 45-48). Element 7 is not a fluid-containing pipe, but instead is a valve stem. Thus, the main flow of fluid is from left to right, or from right to left, through the large passage shown near the bottom of the valve. To the extent that any element corresponds to the sealing plate of the present invention, it must be the closure member 12, which opens or closes a fluid path between passages 2 and 3.

Just as the sealing plate of the present invention sits at the junction of two fluid components, the closure member 12 of Jones sits at the junction of two fluid passages.

The specific invention of Jones is shown mainly in Figures 2 and 4, both of which depict valve stem 7, which is the same component as in Figure 1. The valve stem defines a frame of reference for the drawings. Thus, it is correct to assume that what is shown in Figures 2 and 4 has the same orientation as what is shown in Figure 1.

Figure 2 of Jones shows a pair of orifices 39, and the top view shown in Figure 4 shows six such orifices. These orifices have various orientations, but none of them is parallel to the closure member 12. Indeed, if one sought to form orifices that are parallel to the closure member, the orifices would need to be at the top and bottom of the diagram of Figure 4. But Figure 4 shows that an orifice is missing at both the top and the bottom. Instead, the components at these locations are connected by dowel pins 57.

Thus, in the present claimed invention, the orifice has a longitudinal axis which is generally parallel to the surfaces of the sealing plate. But in Jones, the various orifices are oriented in directions that are non-parallel to the closure member 12.

Not only does Jones fail to suggest the claimed geometrical relationship of the orifice of the present invention, but it suggests a variety of orientations, none of which matches what is recited in the claims! Appellant submits that, in this regard, Jones teaches directly away from the claimed invention.

The geometrical limitation in Claims 28 and 32 insures that fluid flowing through the orifice in the support ring will flow in a direction

that is perpendicular to the main flow of fluid from one component to the other. Jones contains no such suggestion. The orifices of Jones not only are not located anywhere near the main flow of fluid, but even if one superimposed them on the main flow, they would not be perpendicular to the direction of the main fluid flow. In short, the present claimed invention contradicts the teachings of Jones.

Appellant therefore submits that a major basis for the Examiner's reliance on Jones has been invalidated. While Jones shows an orifice in a gasket back-up ring, the orifice does not point in the direction required by the present claims. The person of ordinary skill would not derive a suggestion, from Jones, of an orifice that is perpendicular to the main flow of fluid. For this reason alone, Appellant submits that Jones does not reasonably suggest the claimed features of the orifice.

ii) Jones Addresses a Problem Completely Different
from that Solved by the Present Invention

The context of the invention of Jones, while it relates to fluid handling, differs radically from that of the present invention.

The present invention is a sealing plate. That is, the present invention is a flat plate, containing its own seal, namely an O-ring, and this plate is intended to be inserted between the port faces of two fluid components. The fluid components are brought into abutment with the sealing plate so as to provide a secure path for fluid flow from one component to the other. The O-ring in the sealing plate comprises the sole means for providing a seal between the two port faces.

The teachings of Jones are inconsistent with the concept of a flat plate used for sealing two fluid components. The U-shaped gasket 46 of Jones does not sit between the two port faces of two fluid components to be

connected. On the contrary, the gasket 46 is internal to the valve structure shown in Jones. The gasket interacts with a static fluid, not the dynamic fluid that flows through the main conduit. A gasket having the "U" shape of Jones could not possibly serve as the sole sealing means between two fluid components, as contemplated by the present invention.

The teachings of Jones are also inconsistent with the concept of a flat plate which bears a seal which is the sole means for sealing.

Jones shows no more than an aperture in a gasket back-up ring. The aperture is not oriented in the direction claimed in the present claims. Nor is the aperture used in a structure that is located even in the vicinity of a sealing plate. The aperture of Jones is not located in a component which provides a sealing interface between separate fluid components. Appellant therefore submits that Jones has been mis-applied, and does not support a rejection under Section 103.

iii) The Examiner Overlooks the "Big Picture", and
Engages in Impermissible Hindsight Reconstruction
of the Invention

The Examiner may respond to the above by stating that Jones is cited only for its general suggestion of an apertured support ring, even though the majority of the teachings of Jones do not apply to the claimed device.

Appellant submits that such an argument constitutes reconstruction of the invention by selective hindsight, an exercise which is not permitted by the law, In re Dow Chemical Co., 5 U.S.P.Q.2d 1529 (Fed. Cir. 1988). The patent to Smith, while it differs from the claimed invention in that it does not show a one-piece plate, does deal with the general problem addressed by the present invention, namely the connection by abutment of two opposing fluid components. Yet Smith contains not the slightest

suggestion that the inner ring 22 should have an aperture. Still, the Examiner cites Jones for its showing of an aperture, and argues that it would have been obvious to modify Smith to put an aperture in the inner ring 22.

Appellant submits that if the modification were indeed obvious, such modification would likely have been included in Smith, a reference that issued 36 years after the issuance of Jones. The fact that the problem solved by the present invention went unsolved for the 36 years between the issue dates of Jones and Smith, and for decades beyond, until the filing of the present application more than 20 years after the issuance of Smith, indicates that the Examiner's holding of obviousness is not based on practical reality, but only on hindsight reconstruction.

Appellant therefore submits that Section 103 has been incorrectly invoked, and that Claims 28 and 32 are not obvious over the cited references.

B. Claims 29 and 33

Claims 29 and 33 are believed patentable for the following additional reason, namely that Jones teaches a U-Shaped seal, not an O-ring.

Unlike the seal of the present invention, as recited specifically in Claims 29 and 33, the gasket of Jones is not an O-ring, but instead has a U-shaped structure.

The Examiner paraphrases Jones in stating that the orifice 39 allows fluid pressure to press the seal "upward, outward, and downward" into fluid sealing abutment with surrounding surfaces. The Examiner is clearly referring to the passage in Jones at page 3, column 1, lines 1-6. In this

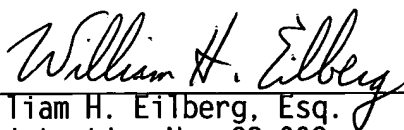
passage, the terms "upward", "outward", and "downward" are correlated with surfaces 43, 68, and 44, respectively. The Examiner's partial quotation obscures the essential point of the passage, namely that the seal has a "U" shape, and that fluid pressure in the cavity 47 forces the elements of the "U" against their respective opposing surfaces. Thus, in Jones, fluid pressure in the valve reinforces the "U" shape of the gasket.

Therefore, Appellant submits that, with respect to Claim 29 and 33, Jones fails to meet the limitations of the claims, because it teaches a U-shaped gasket which is designed to abut three walls of a cavity, not an O-ring.

The Examiner's response to the above argument, in the last Official Action, has been to observe that Smith teaches an O-ring. But Jones contains no suggestion of converting the U-shaped gasket to an O-ring, as there would be no reason for doing so in the context of the problem solved by Jones.

For the reasons given above, Appellant urges reversal of the Examiner's decision, and requests early allowance of the claims on appeal.

Respectfully submitted,

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VIII. Claims Appendix

The claims on appeal are as follows:

28. Apparatus for providing a non-threaded fluid seal between two port faces, comprising:

a) a generally planar, one-piece plate, the plate having an opening, the opening having a boundary, the plate having a pair of surfaces which are parallel to each other,

b) a non-threaded annular seal disposed within the boundary of the opening, and extending around the entire boundary of the opening, and

c) a non-threaded support ring disposed within the annular seal, wherein the support ring includes at least one orifice which provides a fluid connection between said opening and said annular seal,

wherein the annular seal comprises the sole means for providing a seal between said two port faces,

and wherein the orifice has a longitudinal axis which is generally parallel to said surfaces.

29. The apparatus of Claim 28, wherein the annular seal comprises a flexible O-ring, and wherein the support ring comprises a metal ring.

30. The apparatus of Claim 28, wherein the support ring has an outer portion which faces an inner portion of the annular seal, and wherein the support ring is chamfered on said outer portion.

31. The apparatus of Claim 30, wherein the support ring has two chamfers, both chamfers making an angle of about 45° with an axis of the

support ring.

32. Apparatus for providing a non-threaded fluid seal between two port faces, comprising:

a) a generally planar, one-piece plate, the plate having an opening, the opening having a boundary, the plate having a pair of surfaces which are parallel to each other,

b) a non-threaded annular seal disposed within the boundary of the opening, and extending around the entire boundary of the opening,

c) a non-threaded support ring disposed within the annular seal, and

d) a fluid component which abuts the plate,

wherein the support ring includes at least one orifice which provides a fluid connection between said opening and said annular seal,

wherein the annular seal comprises the sole means for providing a seal between the plate and the fluid component,

and wherein the orifice has a longitudinal axis which is generally parallel to said surfaces.

33. The apparatus of Claim 32, wherein the annular seal comprises a flexible O-ring, and wherein the support ring comprises a metal ring.

34. The apparatus of Claim 32, wherein the support ring has an outer portion which faces an inner portion of the annular seal, and wherein the support ring is chamfered on said outer portion.

35. The apparatus of Claim 32, wherein the support ring has two chamfers, both chamfers making an angle of about 45° with an axis of the support ring.

IX. Evidence Appendix

There have been no items of evidence submitted, in this application, under Rules 130 or 131.

There has been one Declaration submitted under Rule 132, together with the Amendment mailed January 10, 2003. This Declaration relates primarily to the patent to Stone, which shows threaded seals. The Examiner no longer relies on the patent to Stone.

X. Related Proceedings Appendix

The undersigned is aware of no related appeals or interferences.



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Inventor: David E. Albrecht
Title: FLANGE PLATES FOR FLUID PORT INTERFACES
Examiner: Alison K. Pickard
Art Unit: 3676
File No.: 505-02

RESPONSE TO OFFICE COMMUNICATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant submits this paper in response to the Notification of Non-Compliant Appeal Brief, mailed January 11, 2005.

Attached is a new Brief, which is believed to comply with the rules.

In a telephone discussion with the Examiner on January 19, 2005, the Examiner stated that the objection under 37 CFR 41.37(c)(1)(vii) would be overcome if the arguments pertaining to Claims 28 and 32, and to Claims 29 and 33, were placed under separate headings. Applicant has done so in the attached version.

Applicant requests entry of the attached Brief.

Respectfully submitted,

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